

## AMENDMENTS TO THE CLAIMS

1       1. (Currently Amended) A method for re-distributing, over a cluster of one or more active  
2       nodes, management of locks on shared resources, the method comprising:  
3       establishing a first master node as master for one or more resources in response to a  
4       hash value range being mapped to said first master node, wherein the hash value  
5       range is associated with said one or more resources by a hash function;  
6       transferring responsibility for mastering said one or more resources from the first  
7       master node to a second master node during a transfer time interval;  
8       during the transfer time interval, a receiving node receiving new lock requests, wherein  
9       said receiving node is one of the first master node and the second master node; -  
10      and  
11      during the transfer time interval, processing the new lock requests;  
12      re-mapping the hash value range to the second master node at the first master node; and  
13      sending initial lock information resident on the first master node at a start of the  
14      transfer time interval to the second master node;  
15      wherein transfer of locks from the first master node to the second master node begins at  
16      a first point in time;  
17      wherein the transfer of locks from the first master node to the second master node ends  
18      at a second point in time;  
19      wherein the transfer time interval begins at the first point in time and ends at the second  
20      point in time; and  
21      wherein other active nodes in the cluster acknowledge that said other active nodes have  
22      been informed that said second master node is assuming responsibility for

23                   mastering said one or more resources.

1   2.   (Canceled)

1   3.   (Currently Amended) The method of ~~Claim 2~~Claim 1, said transferring further  
2                   comprising, in response to receiving acknowledgements from all active nodes in the  
3                   cluster by a full acknowledgement time, sending updated lock information resident on  
4                   the first master node at said full acknowledgement time to the second master node,  
5                   wherein the transfer time interval ends at an update time of said sending updated lock  
6                   information.

1   4.   (Original) The method of Claim 1, said transferring further comprising:  
2                   receiving initial lock information at the second master node, said initial lock  
3                   information resident on the first master node at a start of the transfer time  
4                   interval;  
5                   re-mapping the hash value range to the second master node at the second master node;  
6                   and  
7                   sending a broadcast message to all other nodes in the cluster that the second master  
8                   node is a new master node for resources associated with the hash value range.

1   5.   (Previously Presented) A method for re-distributing, over a cluster of one or more  
2                   active nodes, management of locks on shared resources, the method comprising:  
3                   establishing a first master node as master for one or more resources in response to a  
4                   hash value range being mapped to said first master node, wherein the hash value  
5                   range is associated with said one or more resources by a hash function;

6                   transferring responsibility for mastering said one or more resources from the first  
7                   master node to a second master node during a transfer time interval; and  
8                   processing lock requests received at a receiving node of the first master node and the  
9                   second master node by the receiving node during the transfer time interval, said  
10                  transferring further comprising:

11                  receiving a broadcast message at a set of nodes in the cluster, the set of nodes including  
12                  all nodes in the cluster except the first master node and the second master node;  
13                  wherein the broadcast message indicates that the second master node is a new master  
14                  node for resources associated with the hash value range;

15                  re-mapping the hash value range to the second master node at each node in said set of  
16                  nodes in the cluster;

17                  sending an acknowledgement to the first master node from each node in said set of  
18                  nodes in response to the broadcast message, said acknowledgement indicating  
19                  that said each node in said set of nodes has been informed that said second  
20                  master node is assuming responsibility for mastering said one or more  
21                  resources; and

22                  after sending the acknowledgement, said each node in said set of nodes sending  
23                  subsequent lock requests for resources associated with the hash value range to  
24                  the second master node.

1        6. (Original) The method of Claim 4, said transferring further comprising receiving  
2                  updated lock information from the first master node at the second master node wherein  
3                  the transfer time interval ends at an update time of said receiving updated lock

4 information.

1 7. (Original) The method of Claim 6, wherein:  
2 lock requests include a sequence number; and  
3 said method further comprises deleting stale requests among the updated lock  
4 information received at the second master node, the stale requests indicated by  
5 sequence numbers earlier than sequence numbers in lock requests already  
6 processed on the second master node.

1 8-14. (Canceled).

1 15. (Original) A computer-readable medium bearing instructions for re-distributing, over a  
2 cluster of one or more active nodes, management of locks on shared resources from a  
3 first master node to a second master node during a transfer time interval, the  
4 instructions arranged to cause one or more processors on the first master node to  
5 perform:  
6 re-mapping a hash value range initially assigned to the first master node to the second  
7 master node, wherein the hash value range is associated with one or more of the  
8 shared resources by a hash function;  
9 sending initial lock information resident on the first master node at a start of the  
10 transfer time interval to the second master node;  
11 receiving acknowledgments at the first master node from other active nodes in the  
12 cluster; said acknowledgements indicating that said other active nodes have  
13 been informed that said second master node is assuming responsibility for  
14 mastering said one or more resources.

1    16. (Original) The computer-readable medium of Claim 15, said instructions further  
2        causing the one or more processors to perform, in response to receiving  
3        acknowledgements from all active nodes in the cluster by a full acknowledgement time,  
4        sending updated lock information resident on the first master node at said full  
5        acknowledgement time to the second master node, wherein the transfer time interval  
6        ends at an update time of said sending updated lock information.

1    17. (Original) The computer-readable medium of Claim 15, said instructions further  
2        causing the one or more processors to perform processing lock requests received during  
3        the transfer time interval until receiving acknowledgements from all active nodes in the  
4        cluster.

1    18. (Currently Amended) A computer-readable medium bearing instructions for re-  
2        distributing, over a cluster of one or more active nodes, management of locks on shared  
3        resources from a first master node to a second master node during a transfer time  
4        interval, the instructions arranged to cause one or more processors on the second master  
5        node to perform:

6        receiving initial lock information resident on the first master node at a start of the  
7              transfer time interval;  
8        re-mapping a hash value range initially assigned to the first master node to the second  
9              master node, wherein the hash value range is associated with one or more of the  
10          shared resources by a hash function; and

11          sending a broadcast message to all other nodes in the cluster that the second master  
12          node is a new master node for resources associated with the hash value range;

13       wherein other active nodes in the cluster acknowledge that said other active nodes have  
14       been informed that said second master node is assuming responsibility for  
15       mastering said one or more resources.

- 1     19. (Original) The computer-readable medium of Claim 18, said instructions further  
2           causing the one or more processors to perform receiving updated lock information from  
3           the first master node wherein the transfer time interval ends at an update time of said  
4           receiving updated lock information.
- 1     20. (Original) The computer-readable medium of Claim 19, wherein:  
2           lock requests include a sequence number; and  
3           said instructions further cause the one or more processors to perform deleting stale  
4           requests among the updated lock information received at the second master  
5           node, the stale requests indicated by sequence numbers earlier than sequence  
6           numbers in lock requests already processed on the second master node.
- 1     21. (Original) A computer-readable medium bearing instructions for re-distributing, over a  
2           cluster of one or more active nodes, management of locks on shared resources from a  
3           first master node to a second master node during a transfer time interval, the instructions  
4           arranged to cause one or more processors on a third node to perform:  
5           receiving a broadcast message indicating that the second master node is a new master  
6           node for resources associated with a hash value range, wherein the hash value  
7           range is associated with one or more of the shared resources by a hash function;  
8           re-mapping the hash value range to the second master node;  
9           sending an acknowledgment to the first master node in response to the broadcast

10 message, said acknowledgement indicating that said third node has been informed  
11 that said second master node is assuming responsibility for mastering said one or  
12 more resources; and  
13 after said sending an acknowledgment, sending subsequent lock requests for the one or  
14 more of the shared resources to the second master node.

- 1 22. (Previously Presented) A computer-readable medium carrying one or more sequences of  
2 instructions which, when executed by one or more processors, causes the one or more  
3 processors to perform the method recited in Claim 1.
- 1 23. (Previously Presented) A computer-readable medium carrying one or more sequences of  
2 instructions which, when executed by one or more processors, causes the one or more  
3 processors to perform the method recited in Claim 2.
- 1 24. (Previously Presented) A computer-readable medium carrying one or more sequences of  
2 instructions which, when executed by one or more processors, causes the one or more  
3 processors to perform the method recited in Claim 3.
- 1 25. (Previously Presented) A computer-readable medium carrying one or more sequences of  
2 instructions which, when executed by one or more processors, causes the one or more  
3 processors to perform the method recited in Claim 4.
- 1 26. (Previously Presented) A computer-readable medium carrying one or more sequences of  
2 instructions which, when executed by one or more processors, causes the one or more  
3 processors to perform the method recited in Claim 5.

1    27. (Previously Presented) A computer-readable medium carrying one or more sequences of  
2        instructions which, when executed by one or more processors, causes the one or more  
3        processors to perform the method recited in Claim 6.

1    28. (Previously Presented) A computer-readable medium carrying one or more sequences of  
2        instructions which, when executed by one or more processors, causes the one or more  
3        processors to perform the method recited in Claim 7.